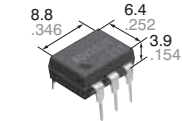
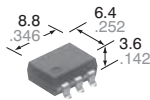


**DIP6-pin type  
with high capacity  
of 2.5A load current**

**PhotoMOS®  
HE 1 Form A  
High Capacity**

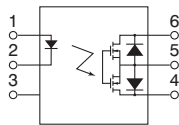


(Height includes  
standoff)



**CAD Data**

mm inch



## FEATURES

- 1. Greatly increased load current in a compact DIP package**  
Continuous load current: 2.5A
- 2. Greatly improved specifications allow you to use this in place of mercury and mechanical relays.**

## TYPICAL APPLICATIONS

- Security equipment
- Fire-preventing system
- Measuring instruments

## TYPES

|                | Output rating* |              | Package  | Part No.                       |                                |           |                             | Packing quantity                                       |               |
|----------------|----------------|--------------|----------|--------------------------------|--------------------------------|-----------|-----------------------------|--|---------------|
|                |                |              |          | Through hole terminal          | Surface-mount terminal         |           |                             | Tube   | Tape and reel |
|                | Load voltage   | Load current |          |                                | Tube packing style             |           | Tape and reel packing style |  |               |
|                |                |              |          | Picked from the 1/2/3-pin side | Picked from the 4/5/6-pin side |           |                             |  |               |
| AC/DC dual use | 60 V           | 2.5 A        | DIP6-pin | AQV252G                        | AQV252GA                       | AQV252GAX | AQV252GAZ                   | 1 tube contains: 50 pcs.<br>1 batch contains: 500 pcs. | 1,000 pcs.    |

\*Indicate the peak AC and DC values.

Note: The surface mount terminal indicator "A" and the packing style indicator "X" or "Z" are not marked on the relay.

## RATING

1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

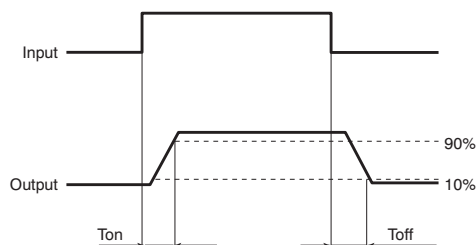
| Item                    |                         | Symbol     | Type of connection | AQV252G(A)                      | Remarks  |
|-------------------------|-------------------------|------------|--------------------|---------------------------------|--|
| Input                   | LED forward current     | $I_F$      |                    | 50 mA                           |  |
|                         | LED reverse voltage     | $V_R$      |                    | 5 V                             |  |
|                         | Peak forward current    | $I_{FP}$   |                    | 1 A                             | $f = 100 \text{ Hz}$ , Duty factor = 0.1%        |
|                         | Power dissipation       | $P_{in}$   |                    | 75 mW                           |  |
| Load voltage (peak AC)  |                         | $V_L$      |                    | 60 V                            |  |
| Output                  | Continuous load current | $I_L$      | A                  | 2.5 A                           | A connection: Peak AC, DC<br>B, C connection: DC |
|                         |                         |            | B                  | 3.5 A                           |  |
|                         |                         |            | C                  | 5.0 A                           |  |
| Peak load current       |                         | $I_{peak}$ |                    | 6.0 A                           | 100ms (1 shot), $V_L = \text{DC}$                |
| Power dissipation       |                         | $P_{out}$  |                    | 500 mW                          |  |
| Total power dissipation |                         | $P_T$      |                    | 550 mW                          |  |
| I/O isolation voltage   |                         | $V_{iso}$  |                    | 1,500 V AC                      |  |
| Temperature limits      | Operating               | $T_{opr}$  |                    | -40°C to +85°C -40°F to +185°F  | Non-condensing at low temperatures               |
|                         | Storage                 | $T_{stg}$  |                    | -40°C to +100°C -40°F to +212°F |  |

# HE 1 Form A High Capacity

## 2. Electrical characteristics (Ambient temperature: 25°C 77°F)

| Item                             |                      | Symbol            | Type of connection                        | AQV252G(A)                                   | Condition   |
|----------------------------------|----------------------|-------------------|---|--|---|
| Input                            | LED operate current  | Typical           | I <sub>Fon</sub>                          | 0.5 mA                                       | I <sub>L</sub> = 100mA  |
|                                  |                      | Maximum           |   | 3 mA   |   |
|                                  | LED turn off current | Minimum           | I <sub>Foff</sub>                         | 0.2 mA                                       | I <sub>L</sub> = 100mA  |
|                                  |                      | Typical           |   | 0.45 mA                                      |   |
| LED dropout voltage              | Typical              | V <sub>F</sub>    | 1.14 V (1.32 V at I <sub>F</sub> = 50 mA) |  | I <sub>F</sub> = 5 mA   |
|                                  | Maximum              |                   | 1.5 V                                     |  |   |
| Output                           | On resistance        | Typical           | R <sub>on</sub>                           | 0.08 Ω                                       | I <sub>F</sub> = 5 mA<br>I <sub>L</sub> = Max.<br>Within 1 s on time    |
|                                  |                      | Maximum           |   | 0.12 Ω                                       |   |
|                                  |                      | Typical           | R <sub>on</sub>                           | 0.04 Ω                                       |   |
|                                  |                      | Maximum           |   | 0.06 Ω                                       |   |
|                                  |                      | Typical           | R <sub>on</sub>                           | 0.02 Ω                                       |   |
|                                  |                      | Maximum           |   | 0.03 Ω                                       |   |
| Off state leakage current        | Maximum              | I <sub>Leak</sub> | 1 μA                                      | I <sub>F</sub> = 0 mA, V <sub>L</sub> = Max. |   |
| Transfer characteristics         | Turn on time*        | Typical           | T <sub>on</sub>                           | 1.1 ms                                       | I <sub>F</sub> = 5 mA, I <sub>L</sub> = 100 mA<br>V <sub>L</sub> = 10 V |
|                                  |                      | Maximum           |   | 5.0 ms                                       |   |
|                                  | Turn off time*       | Typical           | T <sub>off</sub>                          | 0.25 ms                                      | I <sub>F</sub> = 5 mA, I <sub>L</sub> = 100 mA<br>V <sub>L</sub> = 10 V |
|                                  |                      | Maximum           |   | 0.5 ms                                       |   |
|                                  | I/O capacitance      | Typical           | C <sub>iso</sub>                          | 0.8 pF                                       | f = 1 MHz   |
| Maximum                          |                      | 1.5 pF            |   | V <sub>B</sub> = 0 V                         |   |
| Initial I/O isolation resistance | Minimum              | R <sub>iso</sub>  | 1,000 MΩ                                  | 500 V DC                                     |   |

\*Turn on/Turn off time



## RECOMMENDED OPERATING CONDITIONS

Please obey the following conditions to ensure proper relay operation and resetting.

| Item              | Symbol         | Recommended value | Unit |
|-------------------|----------------|-------------------|------|
| Input LED current | I <sub>F</sub> | 5 to 10           | mA   |

### ■ Dimensions

### ■ Schematic and Wiring Diagrams

### ■ Cautions for Use

■ These products are not designed for automotive use.

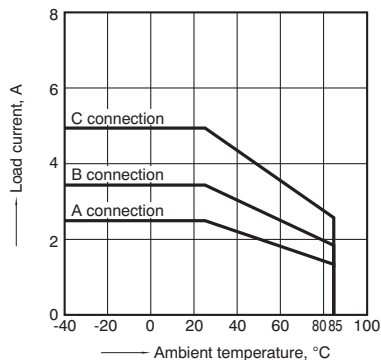
If you are considering to use these products for automotive applications, please contact your local Panasonic technical representative.

Please refer to our information on [PhotoMOS Relays for Automotive Applications](#).

## REFERENCE DATA

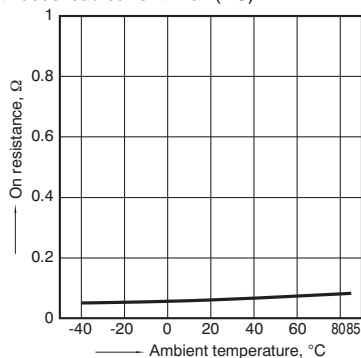
1. Load current vs. ambient temperature characteristics

Allowable ambient temperature: -40°C to +85°C  
-40°F to +185°F



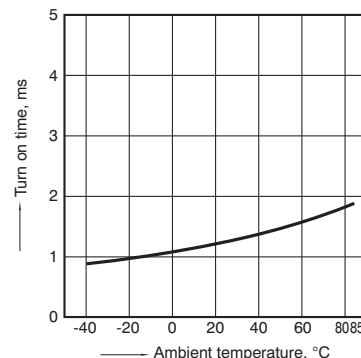
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 4 and 6;  
LED current: 5 mA; Load voltage: Max. (DC)  
Continuous load current: Max.(DC)



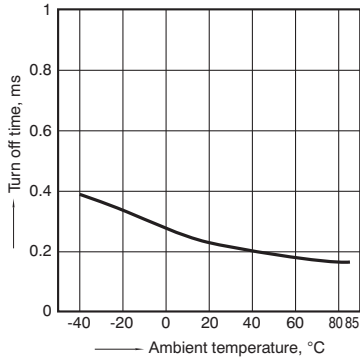
3. Turn on time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC)



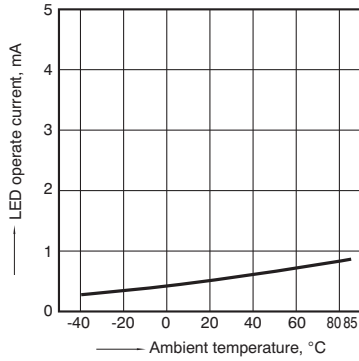
**4. Turn off time vs. ambient temperature characteristics**

LED current: 5 mA; Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC)



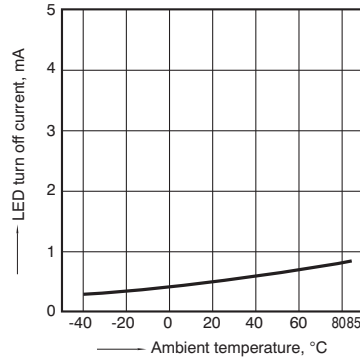
**5. LED operate current vs. ambient temperature characteristics**

Load voltage: 10 V (DC);  
Continuous load current: 100mA (DC)



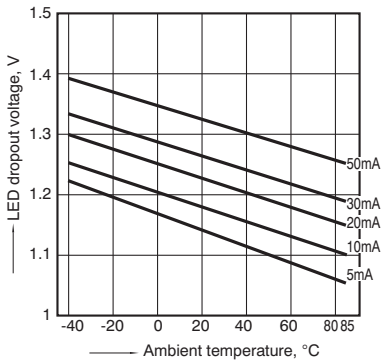
**6. LED turn off current vs. ambient temperature characteristics**

Load voltage: 10 V (DC);  
Continuous load current: 100mA (DC)



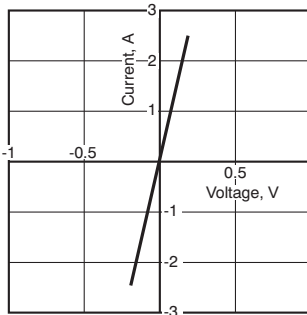
**7. LED dropout voltage vs. ambient temperature characteristics**

LED current: 5 to 50 mA



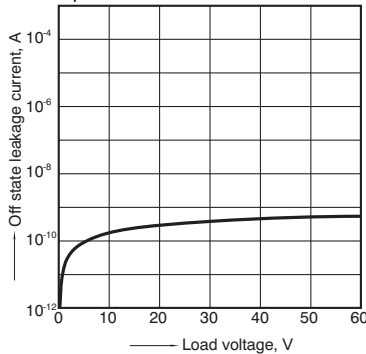
**8. Current vs. voltage characteristics of output at MOS portion**

Measured portion: between terminals 4 and 6;  
Ambient temperature: 25°C 77°F



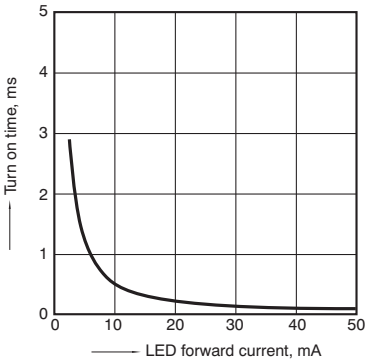
**9. Off state leakage current vs. load voltage characteristics**

Measured portion: between terminals 4 and 6;  
Ambient temperature: 25°C 77°F



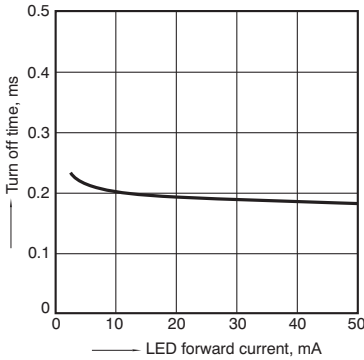
**10. Turn on time vs. LED forward current characteristics**

Measured portion: between terminals 4 and 6;  
Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC);  
Ambient temperature: 25°C 77°F



**11. Turn off time vs. LED forward current characteristics**

Measured portion: between terminals 4 and 6;  
Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC);  
Ambient temperature: 25°C 77°F



**12. Output capacitance vs. applied voltage characteristics**

Measured portion: between terminals 4 and 6;  
Frequency: 1 MHz;  
Ambient temperature: 25°C 77°F

